

ARSENIC STATISTICS

By David A. Buckingham and William E. Brooks

[All values are in metric tons (t) unless otherwise noted]

Last modification: August 26, 2002

| Year | Production | Shipments | Imports | Exports | Stocks | Apparent consumption | Unit value (\$/t) | Unit value (98\$/t) | World production |
|------|------------|-----------|---------|---------|--------|----------------------|-------------------|---------------------|------------------|
| 1900 | | | 1,980 | | | 1,980 | 130 | 2,500 | 6,170 |
| 1901 | 206 | | 2,400 | | | 2,610 | 110 | 2,200 | 5,190 |
| 1902 | 929 | | 2,790 | | | 3,030 | 92 | 1,700 | 5,340 |
| 1903 | 420 | | 2,870 | | | 3,290 | 96 | 1,700 | 3,820 |
| 1904 | 25 | | 2,340 | | | 2,360 | 99 | 1,800 | 3,500 |
| 1905 | 518 | | 2,640 | | | 3,150 | 100 | 1,800 | 13,100 |
| 1906 | 506 | | 2,740 | | | 3,240 | 180 | 3,300 | |
| 1907 | 1,200 | | 3,550 | | | 4,750 | 130 | 2,300 | |
| 1908 | | | 3,530 | | | 3,920 | 130 | 2,400 | |
| 1909 | 834 | | 2,250 | | | 3,090 | 110 | 2,000 | |
| 1910 | 1,030 | | 2,980 | | | 1,950 | 81 | 1,400 | 6,810 |
| 1911 | 2,150 | | 2,500 | | | 3,470 | 87 | 1,500 | 12,800 |
| 1912 | 2,160 | | 3,790 | | | 4,290 | 100 | 1,700 | 27,600 |
| 1913 | 1,730 | | 2,770 | 22.5 | | 2,770 | 130 | 2,140 | 13,400 |
| 1914 | 3,210 | | 2,200 | 0.263 | | 4,300 | 110 | 1,790 | 11,500 |
| 1915 | 3,780 | | 1,930 | 3.67 | | 4,740 | 120 | 1,930 | 13,300 |
| 1916 | 4,110 | | 1,330 | 0.661 | | 4,850 | 170 | 2,540 | 13,300 |
| 1917 | 4,220 | 4,220 | 2,310 | 42.6 | | 5,030 | 410 | 5,220 | 16,400 |
| 1918 | 4,340 | 4,340 | 3,890 | 30.0 | | 5,610 | 340 | 3,680 | 23,200 |
| 1919 | 4,140 | 4,140 | 4,180 | | | 7,150 | 290 | 2,740 | 19,000 |
| 1920 | 7,900 | 7,900 | 4,780 | 5.18 | | 10,500 | 410 | 3,330 | 27,900 |
| 1921 | 4,230 | 3,290 | 2,960 | 8.92 | | 4,430 | 220 | 2,000 | 16,200 |
| 1922 | 6,420 | 6,890 | 2,830 | 5.36 | | 7,630 | 320 | 3,110 | 23,500 |
| 1923 | 10,200 | 9,800 | 7,690 | | | 16,800 | 360 | 3,430 | 47,300 |
| 1924 | 13,900 | 9,930 | 6,280 | | | 16,000 | 290 | 2,760 | 47,200 |
| 1925 | 8,320 | 8,460 | 6,740 | | | 14,900 | 150 | 1,390 | 50,300 |
| 1926 | 4,640 | 8,110 | 5,520 | | | 13,400 | 94 | 862 | 41,100 |
| 1927 | 8,060 | 7,940 | 8,820 | | | 16,500 | 110 | 1,030 | 39,900 |
| 1928 | 9,730 | 8,080 | 7,890 | 458 | | 15,700 | 120 | 1,140 | 43,200 |
| 1929 | 11,400 | 9,990 | 9,280 | 948 | | 19,000 | 120 | 1,140 | 46,000 |
| 1930 | 11,700 | 12,000 | 7,610 | 1,100 | | 19,200 | 120 | 1,180 | 49,600 |
| 1931 | 11,800 | 9,460 | 5,540 | 1,750 | | 13,900 | 120 | 1,280 | 51,000 |
| 1932 | 8,720 | 8,570 | 4,890 | 2,120 | | 11,900 | 120 | 1,430 | 51,500 |
| 1933 | 7,310 | 8,100 | 7,500 | 2,020 | | 14,000 | 120 | 1,510 | 27,300 |
| 1934 | 8,990 | 10,700 | 9,890 | 2,660 | | 18,600 | 110 | 1,340 | 38,200 |
| 1935 | 9,780 | 8,700 | 10,600 | 1,610 | | 18,500 | 100 | 1,190 | 41,600 |
| 1936 | 10,600 | 10,700 | 12,400 | 2,120 | | 22,100 | 100 | 1,180 | 42,200 |
| 1937 | 11,500 | 12,100 | 13,600 | 2,810 | | 22,500 | 95 | 1,080 | 42,400 |
| 1938 | 11,500 | 9,040 | 9,950 | 2,820 | | 17,200 | 87 | 1,010 | 52,200 |
| 1939 | 15,300 | 15,400 | 10,600 | 3,880 | 3,780 | 23,300 | 87 | 1,020 | 42,800 |
| 1940 | 17,200 | 16,000 | 6,980 | 2,690 | 4,770 | 21,700 | 100 | 1,160 | 40,400 |
| 1941 | 22,300 | 23,900 | 7,320 | 4,230 | 3,100 | 29,800 | 120 | 1,330 | 46,000 |
| 1942 | 19,700 | 21,300 | 11,200 | 1,120 | 1,500 | 32,300 | 120 | 1,200 | 47,700 |
| 1943 | 21,400 | 22,300 | 11,100 | 3,260 | 781 | 32,000 | 120 | 1,130 | 50,200 |
| 1944 | 24,800 | 23,700 | 6,850 | 2,990 | 1,900 | 28,900 | 120 | 1,110 | 51,800 |
| 1945 | 16,700 | 17,000 | 9,660 | 2,570 | 1,580 | 26,200 | 120 | 1,090 | 42,100 |
| 1946 | 7,010 | 8,270 | 9,560 | 2,640 | 323 | 17,100 | 150 | 1,250 | 31,800 |
| 1947 | 12,900 | 12,500 | 9,620 | 2,310 | 713 | 21,400 | 170 | 1,240 | 42,400 |
| 1948 | 12,800 | 10,300 | 6,460 | 1,330 | 3,240 | 16,700 | 180 | 1,220 | 40,900 |
| 1949 | 8,790 | 6,990 | 3,260 | 989 | 5,030 | 10,200 | 160 | 1,100 | 26,500 |
| 1950 | 9,120 | 11,900 | 10,300 | 987 | 1,700 | 22,000 | 170 | 1,150 | 35,700 |
| 1951 | 11,100 | 9,860 | 10,500 | 1,210 | 3,320 | 19,800 | 180 | 1,130 | 47,400 |

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| Year | Production | Shipments | Imports | Exports | Stocks | Apparent consumption | Unit value (\$/t) | Unit value (98\$/t) | World production |
|------|------------|-----------|---------|---------|--------|----------------------|-------------------|---------------------|------------------|
| 1952 | 10,800 | 6,350 | 3,190 | 1,180 | 7,740 | 9,430 | 170 | 1,040 | 37,100 |
| 1953 | 7,470 | 7,770 | 3,320 | 845 | 7,430 | 11,000 | 160 | 976 | 20,600 |
| 1954 | 9,040 | 7,910 | 3,430 | 541 | 8,560 | 11,200 | 160 | 970 | 26,100 |
| 1955 | 7,400 | 8,020 | 5,120 | 598 | 7,950 | 13,000 | 160 | 976 | 30,900 |
| 1956 | 8,380 | 13,000 | 4,530 | 643 | 3,320 | 17,400 | 160 | 958 | 33,700 |
| 1957 | 7,210 | 8,780 | 7,100 | 805 | 1,740 | 15,700 | 160 | 925 | 30,900 |
| 1958 | 7,900 | 7,510 | 6,640 | 678 | 2,140 | 14,000 | 160 | 904 | 27,500 |
| 1959 | 3,560 | 4,970 | 13,400 | 307 | 727 | 18,300 | 130 | 726 | 32,100 |
| 1960 | 9,400 | | 8,930 | 439 | | 12,800 | 130 | 714 | 39,400 |
| 1961 | 1,850 | | 13,500 | 322 | | 14,400 | 120 | 652 | 40,500 |
| 1962 | 2,060 | | 11,000 | 477 | | 14,200 | 120 | 645 | 34,100 |
| 1963 | 1,720 | | 10,200 | 199 | | 15,000 | 150 | 798 | 36,600 |
| 1964 | 4,800 | | 12,700 | 687 | 3,160 | 17,100 | 160 | 842 | 39,900 |
| 1965 | 7,660 | | 10,900 | | 1,030 | 16,900 | 170 | 876 | 38,600 |
| 1966 | 5,860 | | 13,100 | | 893 | 16,700 | 150 | 754 | 39,500 |
| 1967 | 3,120 | | 19,100 | | 687 | 18,300 | 170 | 829 | 44,600 |
| 1968 | 3,800 | | 17,700 | | 275 | 16,400 | 180 | 845 | 46,400 |
| 1969 | 6,420 | | 12,800 | | 1,580 | 14,100 | 180 | 800 | 37,700 |
| 1970 | 9,900 | | 13,400 | | 4,400 | 13,900 | 180 | 756 | 37,500 |
| 1971 | 4,670 | | 12,400 | | 8,170 | 13,500 | 180 | 725 | 37,800 |
| 1972 | 6,420 | | 10,000 | | 9,340 | 13,000 | 180 | 702 | 31,400 |
| 1973 | 6,390 | | 9,960 | | 10,000 | 22,000 | 180 | 660 | 35,200 |
| 1974 | 4,600 | | 10,100 | | 7,280 | 25,200 | 380 | 1,260 | 37,200 |
| 1975 | 5,080 | | 8,720 | | 1,580 | 15,400 | 380 | 1,150 | 30,700 |
| 1976 | 4,530 | | 3,370 | | 1,990 | 9,700 | 380 | 1,090 | 26,100 |
| 1977 | 3,370 | | 5,090 | | 2,060 | 12,000 | 380 | 1,020 | 23,200 |
| 1978 | 3,980 | | 7,910 | 232 | 206 | 13,400 | 670 | 1,670 | 23,300 |
| 1979 | 4,530 | | 8,950 | 734 | 69 | 15,600 | 700 | 1,570 | 22,400 |
| 1980 | 3,400 | | 9,000 | 1,150 | | 12,400 | 920 | 1,820 | 23,600 |
| 1981 | 4,050 | | 14,300 | 396 | 69 | 20,000 | 1,200 | 2,150 | 33,100 |
| 1982 | 8,000 | | 12,100 | 2,010 | 1,510 | 16,200 | 1,200 | 2,030 | 34,500 |
| 1983 | 7,300 | | 10,100 | 64 | 2,350 | 13,600 | 960 | 1,570 | 31,900 |
| 1984 | 6,800 | | 13,900 | 58 | 2,500 | 17,300 | 960 | 1,510 | 35,600 |
| 1985 | 2,200 | | 15,300 | 120 | 681 | 18,100 | 960 | 1,460 | 40,300 |
| 1986 | | | 21,500 | 164 | 280 | 21,100 | 960 | 1,430 | 39,600 |
| 1987 | | | 22,400 | 50 | 174 | 21,900 | 1,000 | 1,440 | 47,200 |
| 1988 | | | 22,400 | 120 | 76 | 22,300 | 960 | 1,320 | 40,400 |
| 1989 | | | 22,500 | 126 | 76 | 22,300 | 790 | 1,040 | 49,400 |
| 1990 | | | 20,700 | 149 | 76 | 20,500 | 670 | 836 | 40,400 |
| 1991 | | | 22,000 | 233 | | 21,600 | 730 | 874 | 34,800 |
| 1992 | | | 24,100 | 94 | | 23,900 | 850 | 988 | 34,700 |
| 1993 | | | 21,700 | 364 | | 21,300 | 750 | 846 | 31,900 |
| 1994 | | | 21,600 | 79 | | 21,500 | 940 | 1,030 | 35,400 |
| 1995 | | | 22,700 | 430 | | 22,300 | 960 | 1,030 | 35,600 |
| 1996 | | | 21,400 | 36 | | 21,400 | 960 | 998 | 32,500 |
| 1997 | | | 23,700 | 61 | | 23,700 | 900 | 914 | 31,500 |
| 1998 | | | 30,300 | 177 | | 30,100 | 940 | 940 | 30,300 |
| 1999 | | | 23,400 | 1,350 | | 22,000 | 850 | 832 | 31,000 |
| 2000 | | | 24,500 | 41 | | 24,400 | 940 | 890 | 27,900 |

Arsenic Worksheet Notes

Data Sources

Sources of data for the arsenic worksheet are the mineral statistics publications of the U.S. Bureau of Mines and the U.S. Geological Survey—Minerals Yearbook (MYB) and its predecessor, Mineral Resources of the United States (MR); Mineral Commodity Summaries (MCS) and its predecessor, Commodity Data Summaries (CDS); and Mineral Facts and Problems (MFP). Years of publication and corresponding years of data coverage are listed in the References section below. In addition, some data came from U.S. Bureau of Mines Information Circular 9382 (Loebenstein, 1994). Blank cells in the worksheet indicate that data are not available.

Production

Domestic production is defined as crude and refined arsenic reported in terms of arsenic content. Production data were not available for the years 1900 and 1908. Domestic arsenic production ceased after 1985. Data for the years 1960, 1970, and 1980 came from Loebenstein (1994). Data for the years 1961–69 and 1971–79 are from the MFP. Other data are from the MR and the MYB.

Shipments

Domestic producer shipments are reported in terms of arsenic content. Data on shipments are not available prior to 1917 and after 1959. Data are from the MR and the MYB.

Imports

Data include arsenic metal, and the arsenic content of arsenic compounds such as trioxide (white arsenic), sulfides (mostly ore); calcium, lead, and sodium arsenic imports to the United States, excluding these compounds, arsenic green, arsenic purple, and sheep dip. Contained arsenic is calculated using the percentage of arsenic in each compound, when compounds are combined the average arsenic grade is used. Data are totaled on an annual basis. Data are from the MR and the MYB.

Exports

Data include the arsenic content of arsenic metal and ore, arsenic trioxide (white arsenic), calcium, and lead arsenic compounds exported from the United States. Contained arsenic is calculated using the percentage of arsenic in each compound, when compounds are combined the average arsenic grade is used. Data are totaled on an annual basis. Export data are not available prior to 1913, for the years 1919, 1923–27 and 1965–75. Data are withheld because they are proprietary for the years 1976–77. Data for the years 1976–86 and 1989–95 are from the MCS. All other data are from the MR and the MYB.

Stocks

Data are reported in terms of the arsenic content of producer stocks. Stock data are not available prior to 1939, for the years 1960–63, and 1991–2000. Data for the years 1964–81 are from the MFP. All other data are from the MR and the MYB.

Apparent Consumption

Apparent consumption data for the arsenic spreadsheet are a combination of published and calculated consumption data. Apparent consumption is calculated for the years 1900, 1907, and 1909 using the following equation:

$$\text{APPARENT CONSUMPTION} = \text{PRODUCTION} + \text{IMPORTS} - \text{EXPORTS} \pm (\text{STOCK CHANGES}).$$

If arsenic data for a particular category, other than apparent consumption, were unavailable, data were presumed to be zero in making the above calculation. Apparent consumption is interpolated for the year 1908. Published apparent supply data are used for the years 1902–06. Published apparent consumption data are used for the years 1910–59 and 1984–95. Published apparent demand data are used for the years 1996–2000. These data are from the MR and the MYB. Published apparent demand data are used for the years 1960–83. These data are from the MFP.

Unit Value (\$/t)

Unit value is defined as the value of 1 metric ton (t) apparent consumption of arsenic content. Excluding the year 1908, data are estimated using the market price in U.S. dollars per ton of arsenic trioxide. Data for 1908 is the average of the 1908 market price range for arsenic trioxide. The market price of arsenic trioxide was converted to a value for the contained arsenic by dividing the arsenic trioxide price by the percentage of arsenic contained in arsenic trioxide (75.7%). Data are from the MR and the MYB.

Unit Value (98\$/t)

The Consumer Price Index conversion factor, with 1998 as the base year, is used to adjust unit value in current U.S. dollars to the unit value in constant 1998 U.S. dollars.

World Production

Data are the world production of arsenic trioxide in terms of arsenic content. No data are available from 1906–09. Data are from the MR and the MYB.

References

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